



# **A Handy and Versatile Calculator for AFV Emission Reduction Benefits**

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**Clean Cities 9**

**May 20, 2003**





# SIP Credits for AFVs

- **Clean Cities have been increasing their AFV fleets for years; under EPA's Voluntary Mobile Source Emission Reduction Program (VMEP), Energy Policy Act mandates do not preclude new reduction credits for AFVs not already part of a State Implementation Plan (SIP)**
- **Such credits will be incremental for years into the future: the more original-equipment manufacture AFVs, the more demonstrable emission reductions**
- **For about a 10-year period (1998-2008), acquiring gaseous-fueled AFVs in preference to conventional counterparts has yielded and will continue to yield net emission benefits over conventional counterparts of the same model year**



# Key Provisions of VMEP for AFVs

- **Policy enacted on October 23, 1997**
- **Goal: Respond to the public demand for programs using voluntary measures, market incentives, and other innovative strategies for progress toward Clean Air**
- **Credit generation may arise from seasonal or episodic measures not already included in a mandated program**
- **Means of quantifying the benefit must be reliable and defensible**
- **Must be accompanied by any necessary adjustments for compliance and/or programmatic uncertainty**
- **Funding eligibility under CAAA Sec. 105 and CMAQ**



# EPA/DOE Cooperation to Develop a Reduction Credit Calculation Tool

- **Objective:** minimize effort for Clean Cities Coordinators and stakeholder fleets to calculate their AFV emission benefits under VMEP
- EPA/OTAQ and DOE/OTT (ANL) collaborated 1998-2001 to develop a user-friendly software tool (run on a standard desktop) to calculate emission benefits from input data of direct relevance to stakeholders, Transportation Improvement Program (TIP) conformity staff and SIP planners: *AirCred*
- *AirCred* is consistent with EPA models and annual model year engine and vehicle emission certification results



# Implications of MOBILE5 to MOBILE6 Transition for AFVs

## MOBILE6 Brings Major Relevant Changes to the Emissions Estimation Process:

- **Baseline credits for AFVs must now reflect *net* savings relative to conventional counterparts certified under the National Low-emission Vehicle Program (NLEV)**
- **Certification data now based on the Supplemental Federal Test Procedure (different average operating regime from prior process)**
- **Natural gas vehicles are explicitly included in the model, but emission test data applied are based largely on pre-1999 technology**



# “Old” *AirCred* and “New” *AirCred*

## PREVIOUSLY

- **MOBILE5b based**
- **Ozone-season reductions only**
- **Automobiles, light trucks, and NG transit and school buses only**
- **Fleet (total AFV stock) credit estimator through 2004; no vehicle retirement**
- **Clean Cities only covered (both attainment and non-attainment)**
- **On-line version available 1999-2000 embargoed for security**

## NOW

- **MOBILE6 based**
- **Ozone season + winter (CO) reductions**
- **Medium-duty trucks and propane buses added**
- **Fleet credit estimator through summer 2007 (ozone) and winter 2007-2008 (CO); vehicles assumed retired or resold after 6 years of service life**
- **ALL CO non-attainment and/or maintenance areas and (using translator) all ozone SIP areas**
- **New secure interactive version nearing readiness for release**


Office of Transportation - Alternative Fuel Vehicles Air Credit Calculator

File Help


Distribution Version 4.0  
Updated 01Jan2003

# AirCRED

for **ALTERNATIVE  
FUEL  
VEHICLES**



Downloadable software for determining emissions credits and benefits for alternative fuel vehicles



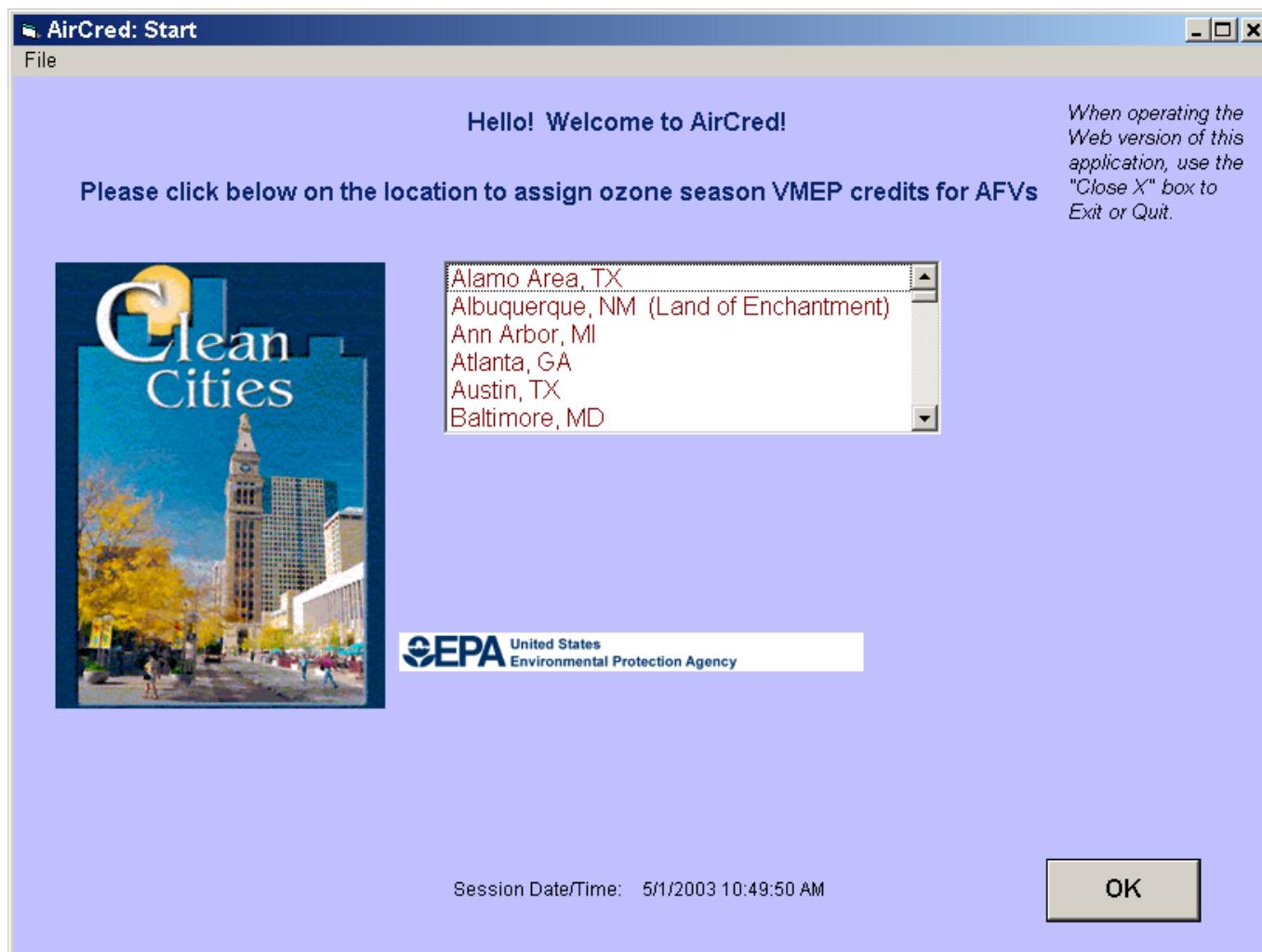
United States  
Environmental Protection Agency

[Click Here to run the Ozone  
Season Credit Version](#)

[Click Here to run the Winter CO  
Credit Version](#)

2001-03 Argonne National Laboratory

Session Date/Time: 5/1/2003 10:48:06 AM





# AFV Data

How many new AFVs of each of these types were delivered from July 1, 1998 thru June 30, 2000...  
...how many AFVs were delivered from July 1, 2000 thru June 30, 2001...  
...and how many additional new AFVs were delivered by June 30, 2002?

(Replace zeros below as applicable)

	1998-00	2000-01	2001-02		1998-00	2000-01	2001-02
Dedicated CNG light trucks, vans, and minivans in place of gasoline counterparts	<input type="text" value="50"/>	<input type="text" value="50"/>	<input type="text" value="50"/>	Dedicated CNG automobiles	<input type="text" value="50"/>	<input type="text" value="50"/>	<input type="text" value="50"/>
Dual-fueled CNG light trucks, vans, and minivans in place of gasoline counterparts	<input type="text" value="50"/>	<input type="text" value="50"/>	<input type="text" value="50"/>	Dual-fueled CNG automobiles	<input type="text" value="50"/>	<input type="text" value="50"/>	<input type="text" value="50"/>
LPG (propane)-fueled light trucks, vans, and minivans in place of gasoline counterparts	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	Medium-duty LPG (propane) trucks replacing diesel MDTs	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Natural gas-fueled full-size transit buses	<input type="text" value="25"/>	<input type="text" value="25"/>	<input type="text" value="25"/>	Natural gas school buses replacing diesel buses	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
LPG (propane)-fueled full-size transit buses replacing diesel buses	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	LPG (propane)-fueled school buses replacing diesel buses	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Electric light-duty trucks	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="0"/>	Electric automobiles	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

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[Version 4.0--To be used 12/1/02 - 6/30/03]

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OK

# OZONE SEASON RESULTS

Year 2002 Results

for Tucson, AZ

Attributable (pounds) to the following vehicle types in the amounts shown	Your 2002 Credit for DAILY Non-Methane Hydrocarbons (NMHC) Reduced was:	Your 2002 Credit for DAILY Carbon Monoxide (CO) Reduced was:	Your 2002 Credit for DAILY Oxides of Nitrogen (NO <sub>x</sub> ) Reduced was:
Dedicated Natural Gas Light Trucks	18.23	102.84	0.00
Dual-fuel Natural Gas Light Trucks	9.12	51.42	0.00
Dedicated CNG Autos	11.22	70.66	5.18
Dual-fuel CNG Autos	5.61	35.33	2.59
Transit buses			
Natural Gas			173.46
LPG (Propane)			0.00
School buses			
Natural Gas			0.00
LPG (Propane)			0.00
LPG Light-Duty Trucks	0.00	0.00	0.00
LPG Medium-Duty Trucks			0.00
Electric Light-Duty Trucks	5.15	68.34	6.64
Electric Autos	0.00	0.00	0.00

Tons = 0.025

Tons = 0.164

Tons = 0.094

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49.33

Pounds

328.59

Pounds

187.87

Pounds

Quit

View Year 2003 DAILY Credits

View Credits

Print this page

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Current Date/Time: 5/1/2003 10:56:22 AM

Year 2004 Results

for Tucson, AZ

The Seasonal DAILY Credits for this fleet in the Year 2004 Will be:

	Tons	Pounds
NMHC	0.026	52.98
CO	0.173	346.14
NOx	0.101	201.72

View  
Estimated  
2005 Credits

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Quit

Year 2007 Results

for Tucson, AZ

The Seasonal DAILY Credits for this fleet in the Year 2007 Will be:

	Tons	Pounds
NMHC	0.031	61.72
CO	0.235	470.19
NOx	0.113	226.31

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# WINTER VERSION

Wrap-up

for Reno (Truckee Meadows), NV

Your 2002-03 Credit for DAILY Cold Season Pounds of Carbon Monoxide (CO) Reduced is:

Dedicated Natural Gas Light Trucks	207.34
Dual-fuel Natural Gas Light Trucks	103.67
Dedicated CNG Autos	139.77
Dual-fuel CNG Autos	69.89
LPG Light-Duty Trucks	0.00
Electric Light-Duty Trucks	139.42
Electric Autos	0.00

Tons = 0.330

660.09 Pounds

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Quit

\*Attributable (pounds) to the following vehicle types in the amounts shown

View Winter 03-04 DAILY Credits

View Credits

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Year 2006 Results

for Reno (Truckee Meadows), NV

The Seasonal DAILY Credits for this fleet in the Year 2006 Will Be:

CO

Dedicated Natural Gas Light Trucks	318.78
Dual-fuel Natural Gas Light Trucks	159.39
Dedicated CNG Autos	0.00
Dual-fuel CNG Autos	0.00
LPG Light-Duty Trucks	0.00
Electric Light-Duty Trucks	173.37
Electric Autos	0.00

Attributable (pounds) to the following vehicle types in the amounts shown

View Year 2007  
DAILY Credits

View Credits

Print this page

Tons =

0.326

651.54

Pounds

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The executable model is called  
“*NewCred*” and is downloadable from

<http://www.aircred.anl.gov>

Also links from AFDC, Clean Cities,  
and EPA/OTAQ web sites